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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,084	06/20/2001	Kensaku Komatsu	209991US0	2344

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,084

Applicant(s)

KOMATSU ET AL.

Examiner

Ana M Fortuna

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 10-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/01/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1-4, 6-8, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parham et al (5,258,149)(hereinafter '149) in view of Ruckenstein et al (5,993,661)(hereinafter '661) and JPA 58-91822 (hereinafter '8221). The combination of references '149 and '661 was discussed in the Office action filed on 11/15/02. Reference '822 is further cited as cumulative, teaching the process of making a polysulfone hollow fiber membrane by spinning a dope containing the polysulfone material, silica particles or powder, a solvent, coagulating the fibers or membrane, and extracting silica with sodium hydroxide solution (entire disclosures, examples 1-4). '822 clearly teaches the effect of silica particles size in the final membrane pore size and the increase in pore size of the formed membrane by the increase in silica particle size. It would have been obvious to one skilled in the art at the time the invention was made to produce a polysulfone membrane and form large pores, e.g. capable of producing a membrane with a molecular weight cut-off within the claimed range (1-10 micron), based on '822, which reference teaches the membrane having pores of 1.2 micron from

particles having a size of 3.5 micron (example 2, page 2) the water flow will be dependent on pore size or molecular weight cut-off of the membrane and can be inherent of the membrane made from the same composition, the membrane of '822 discloses a high water flow (9800 l/m². hr kg/cm²).

Regarding to the additive now claimed as part of the membrane composition, Parham et al ('169) teach the addition of additives as optional to modify the characteristics of the membrane, as added as part of the membrane dope, e.g. PEG, PVP. etc (column 5, lines 14-24). From the combination of reference above it is clear that independently of the intended use, microfiltration membranes with large pore size, and high water permeability can be obtained by the process of '149, or the combination of '149, '661, and '822, by selecting higher particles size to produce larger pores and therefore larger water flows.

3. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parham et al (5,258,149)(hereinafter '149) in view of Ruckenstein et al (5,993,661)(hereinafter '661) and JPA 58-91822 (hereinafter '822), as applied to the claims above, and further in view of Ruckenstein et al (5,019,261). The combination. Of references '149, '661, and '261 has been discussed in paper of 11/15/02 (non final rejection), reference '822, as discussed above is added to support the change in pore size by increasing the silica or pore forming particles size, and that high water flow (microfiltration) membranes can be produced by increasing the pore size.

Response to Arguments

4. Applicant's arguments filed 12/01/03 have been fully considered but they are not persuasive. Reference '149 does not teach the pore size or cut-off of the membrane intended for a particular separation process, however, teaches the skilled in the art how to make membranes from the same process with pore sizes larger than the desired pore size, e.g. 0.7 microns, which will cut-off particles of size larger than 0.7 microns. For producing membranes with cut-off of 10 microns, pore sizes of lower than 10 microns need to be produced, and can be obtained as suggested by the prior art above, by mixing the polymer solution with particles having a diameter larger than 10 microns or about 10 microns. The addition of additive is disclosed in '149, and the effect in facilitating phase separation is inherent of the additive, e.g. PEG. The rejection as discussed in the previous action, and further in combination with '822 (JPA), is maintained.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ana M Fortuna
Primary Examiner
Art Unit 1723

AMF

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February 12, 2004